Project Title:
The Collaborative Sun-Earth Connector

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Project Information:
The success of the LWS program demands that scientists be able to navigate through a complex, distributed data system to find the data they need; efficiently cull through possibly peta-bytes of data to acquire the relevant information; and assimilate data from multiple instruments and missions reactively or proactively via intelligent interpretation, comparison and fusion. A working environment and data assimilation infrastructure that presents the LWS components as an integrated, robust system is essential to keeping the focus on the science rather than on data management - and this system must be operational when SDO is launched in 2007. We propose to develop a test-bed, distributed data system that can meet this goal. The Collaborative Sun-Earth Connector (CoSEC) will merge the successful components of current state-of-the-art prototype systems, including the "Problem-Solving Environment for Living with a Star" (PSELWS), the "European Grid of Solar Observations" (EGSO) and the "Virtual Solar Observatory (VSO), as well as on-going development of SolarSoft applications. PSELWS will provide the basic system architecture; ESGO and VSO will provide integration into the grid infrastructure -- with its security and resource-allocation capabilities -- and unified data descriptions. The CoSEC system will be populated with application services to support space weather prediction, space climate characterization and Solar-B and STEREO data analysis operations. A flare foresting application will build upon these services to assess the performance of CoSEC and to form the foundation of a distributed, empirical tool for space weather forecasting -- the first space weather "killer-app". At the end of this three-year project, the CoSEC test-bed will have laid the groundwork for implementing a complete LWS/SDO data system.

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Citations: